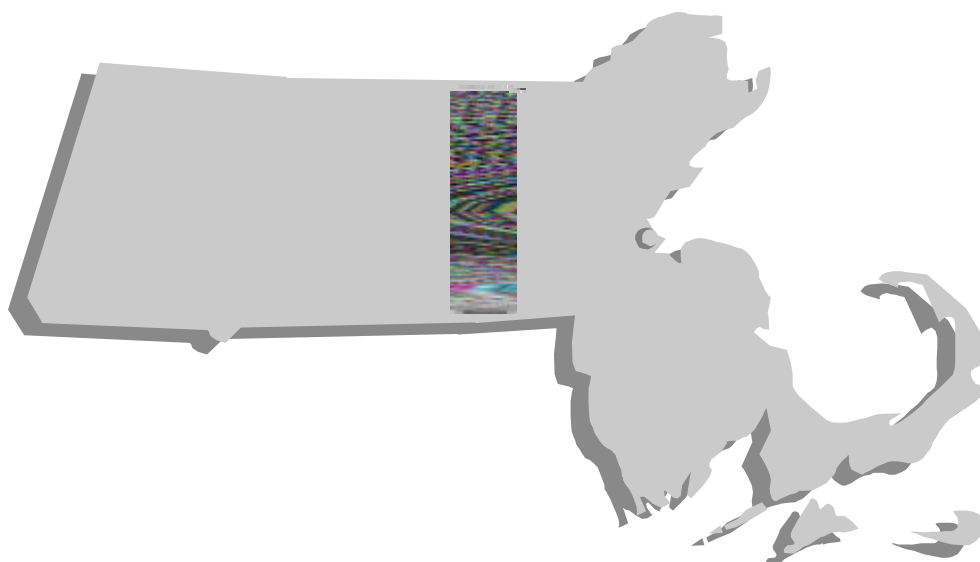

Volume 20

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Issue 00-2

Autumn 2000



In this issue:

- ◆ **The New Food Code Regulation**
- ◆ **Sulfites**
- ◆ **Sushi**
- ◆ **Safer Beaches**

The Reporter

A publication of
the Division of Food and Drugs, Food Protection Program
and the Division of Community Sanitation

Table of Contents

Issue 00-2

Autumn 2000

<i>Letter from the Directors</i>	4
 The New Food Code Regulation	 6
♦ 1999 Food Code Guideline: Time as a Public Health Control - Variance Requirement	
♦ Alternative to Bare-Hand Contact with Ready-to-Eat Foods	
♦ Food Employee Reporting Agreement	
♦ Exclusions and Restrictions for Food Employees and Applicants	
♦ Removal of Exclusions and Restrictions for Food Employees and Applicants	
♦ Guide to Excluding and Restricting Food Employees for Establishments Serving the General Population	
♦ Guidelines for Excluding and Restricting Food Employees for Establishments Which Serve a Highly Susceptible Population	
 State Bookstores	 19
 Sulfites	 20
 Sushi	 22
 Some Useful Addresses on the Food Protection Program Website	 24
 Foodborne Illness: What Consumers Need To Know	 25
 The Color of Meat and Poultry	 28
 Safer Beaches	 31

The Reporter is published by the Massachusetts Department of Public Health, Division of Food and Drugs, Food Protection Program and the Division of Community Sanitation. For further information on these and other topics, Food Protection Program staff may be reached by calling 617-983-6712 and Division of Community Sanitation staff may be reached by calling 617-983-6762.

This publication is sent to all Boards of Health in the Commonwealth. It is requested that a copy be circulated to all board members and interested employees. Other interested individuals and agencies may request a copy by contacting the Editor.

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Letter from the Directors:

Richard D. Waskiewicz, M. S., Division of Food and Drugs, Food Protection Program
Howard S. Wensley, M.S., C.H.O., Division of Community Sanitation



During Spring and Summer 2000, the Division of Food and Drug's Food Protection Program (FPP) and Division of Community Sanitation (DCS) staff were involved in various stages of new public health regulations.

For the Food Protection Program, this work included:

- training for the implementation of the new FOOD CODE, (105 CMR 590.000 State Sanitary Code for Food Establishments and Vending Machines, Chapter X) that became effective on October 1, 2000.
- the expansion of 105 CMR 500.000, Good Manufacturing Practices for Food to include limited wholesale food processing and manufacturing operations in residential kitchens that meet the overall requirements of the GMP regulation.
- the incorporation of 105 CMR 550 Bakeries and Bakery Products and 105 CMR 595.000 Vending Machines into 105 CMR 590.000 State Sanitary Code for Food Establishments and Vending Machines, Chapter X.

Since the March 2000 approval of the Food Code, the FPP and U.S. Food and Drug Administration (FDA) staff, in cooperation with the Massachusetts Health Officers Association (MHOA) and Massachusetts Association of Health Boards (MAHB), has presented more than 16 two-day workshops on the new, revised Regulation. By October 2000, more than 600 local board of health and food industry personnel completed the training. Additional workshops are scheduled and will continue throughout the Fall, especially for local board of health members.

Selected training materials from the workshops are included in this edi-

tion of THE REPORTER. It is anticipated that the implementation for the new process for the provisions of the Food Code will evolve over the next six months to a year.

The Division of Community Sanitation continues to closely monitor legislation. The Beach Bill, which is new legislation, requires the regulation and inspection of bathing beaches. It is hoped that there will be additional legislative action, action that will provide funding to the DCS and local Boards of Health for program implementation. i.e., weekly laboratory analyses of bathing beach water.

In 1999, an advisory committee on bathing beach quality (105 CMR 445.000, *Minimum Standards for Bathing Beaches*) reviewed the regulations, which prompting the DCS to institute emergency regulations establishing additional indicator organisms. These regulations were in effect for the 2000 bathing season.

Additional hearings will be held shortly to establish indicator organisms for use in determining water quality standards as well as coming into compliance with the recently enacted statute.

Three additional temporary staff inspectors were hired for the recreational camp season to assist in the inspection of camps, completing 193 inspections. During the season, inspectors encountered corporate-owned camps (often soccer camps) that were operating in more than one community. Often these camps lacked proper licensing, and local Board of Health had not been notified of the operation. Some of these camps are also expressing concern about unequal enforcement and requirements.

DPH, the camps, and boards of health will be working over the next several months to develop a system to ensure that the camps request licenses in a timely manner and that the requirements of the boards of health are uniform.

In early autumn, Jennifer Murphy joined the Division of Community Sanitation as Assistant Director. Previously, the Assistant Director worked in the Childhood Lead Poisoning Prevention Program at the Massachusetts Department of Public Health. In the FPP, John Racioppi joined the staff as a Senior Food and Drug Inspector. In addition, Meghan Nordt, bacteriologist, left the FPP for the private sector.

After 38 years of service with the Massachusetts Department of Public Health, Richard D. Waskiewicz will be retiring as Director of the Food Protection Program.

The New Food Code

Luisa Siniscalchi, Dr.P.H.

The new 105 CMR 590.000, Minimum Sanitation Standards for Food Establishments is now in effect. The new regulation, which includes the adoption of the Federal 1999 Food Code, went into effect on October 1, 2000. The Food Protection Program (FPP) has provided instruction to local boards of health, assisting in explaining and interpreting the new regulation. More than 600 local board of health agents have completed a 2-day Food Code Training and additional training dates are scheduled. The Food Protection Program will also provide training at four Massachusetts Association of Health Board sessions this fall. In addition to training sessions, the FPP has developed numerous guidance and support materials, including the Industry Training Packet, which includes instructor material for the local agents to train food establishment operators in their jurisdictions. In August, this packet was mailed to all local boards of health.

The purpose and intent of the new food establishment regulations have remained the same. However, there are a number of major changes in the regulation. The following is a brief description of some of the major changes.

Certified Food Protection Manager

Every food establishment must have at least one full time equivalent employee who is at least 18 years of age and who has passed a food safety exam that is recognized by the Massachusetts Department of Public Health. Establishments have until October 1, 2001 to comply with this requirement. There are four exemptions to this requirement listed in 590.003(A)(3).

Person-in-Charge (PIC)

A PIC must be present in the food establishment during all hours of operation. The assigned PIC must be knowledgeable about food safety and the prevention of foodborne illness. The PIC must also ensure that the food establishment is operating in compliance with 105 CMR 590. No food service establishments are exempt from this requirement.

Employee Health

The PIC is required to inform employees that they are required to report if

- ? ill with symptoms that may related to a foodborne illness,
- ? diagnosed with a foodborne illness,
- ? live with someone who has a foodborne illness, or

- ? if they or someone in their household has been exposed to an outbreak of foodborne illness.

Employees who have symptoms or who are diagnosed with a foodborne illness will either be *restricted* or *excluded* from working.

No Bare-Hand Contact with Ready-to-Eat (RTE) Foods

The regulation prohibits all bare-hand contact with RTE foods, unless an establishment develops and maintains a Written Alternative Operational Procedure.

Consumer Advisory

When an establishment serves ready-to-eat, raw or undercooked animal foods, consumers must be advised that eating such foods increases the risk of contracting a foodborne illness. By January 1, 2001 all retail food establishments must comply with the regulation.

Time as a Public Health Control

This provision allows potentially hazardous foods, regardless of temperature, to be maintained for 4 hours or less. This provision applies to time immediately prior to service or during preparation prior to cooking. Establishments must obtain an approval from the local board of health BEFORE “time as a public health control” can be implemented..

During the training sessions, participants were provided with a variety of study aids and support materials to assist in the implementation of the new 590.000. Among these materials were the following items that are included in this issue of THE REPORTER

- ◆ 1999 Food Code Guideline: Time as a Public Health Control - Variance Requirement
- ◆ Alternative to Bare-Hand Contact with Ready-to-Eat Foods
- ◆ Food Employee Reporting Agreement
- ◆ Exclusions and Restrictions for Food Employees and Applicants
- ◆ Removal of Exclusions and Restrictions for Food Employees and Applicants
- ◆ Guide to Excluding and Restricting Food Employees for Establishments Serving the General Population
- ◆ Guidelines for Excluding and Restricting Food Employees for Establishments Which Serve a Highly Susceptible Population

FC 3-501.19 Time as a Public Health Control

105 CMR 590.004(H) Variance Requirement

Public Health Rationale

Potentially hazardous food (PHF) may be held without temperature control for short time periods (not exceeding four hours) because there will be no significant growth or toxin production possible in that limited time.

Time as a public health control may be used for:

- A working supply of potentially hazardous food before cooking, or
- Ready-to-eat, PHFs that are displayed or held for service for immediate consumption.

Note: Once a food is removed from temperature control, it must be cooked, consumed or discarded by the end of the four-hour period.

Variance Requirements

When time only (rather than time and temperature) is used as a public health control for potentially hazardous food, a variance is required from the board of health. The variance request must be in writing and shall include procedures that address the following:

- How food will be marked or otherwise identified to indicate the time that is four hours beyond the point in time when the food is removed from temperature control. (For example, labels, marker, color tags, etc.)
- How food will be cooked and served, served if ready-to-eat, or discarded, within four hours from the point in time when the food is removed from temperature control. (For example, a ham and cheese calzone removed from the oven and placed on the counter at 11:00 AM must be marked with a time not to exceed 3:00 PM.)
- How food in unmarked containers or packages or marked to exceed a four-hour limit will be discarded.

These written procedures must be maintained in the food establishment and made available to the food inspector upon request during routine inspections and complaint investigations.

Exemption to Variance Requirement

Potentially hazardous foods that are held without temperature control for up to one hour during preparation do not require a variance. Potentially hazardous foods, such as pizza, which are served during a meal period do not require a variance if the amount of time out of temperature-control does not exceed one hour.

Note

In food establishments, such as nursing homes and hospitals that serve highly susceptible populations, time as a public health control may not be used as the public health control for raw eggs.

Food Employee Reporting Agreement

Preventing Transmission of Diseases through Food by Infected Food Employees

The purpose of this agreement is to ensure that Food Employees and Applicants who have received a conditional offer of employment notify the Person-in-Charge when they experience any of the conditions listed in order that the Person-in-Charge can take appropriate steps to preclude the transmission of foodborne illness.

I agree to report to the Person-in-Charge:

Symptoms:

Diarrhea	Jaundice
Fever	Sore throat with fever
Vomiting	Lesions containing pus on the hand, wrist, or an exposed body part (such as boils and infected wounds, however small)

Medical Diagnosis

Whenever diagnosed as being ill with *Salmonella* Typhi (typhoid fever), *Shigella* spp. (shigellosis), *Escherichia coli* O157:H7, hepatitis A virus, *Entamoeba histolytica*, *Campylobacter* spp., *Vibrio cholera* spp., *Cryptosporidium parvum*, *Giardia lamblia*, Hemolytic Uremic Syndrome, *Salmonella* spp. (non-typhi), *Yersinia enterocolitica*, or *Cyclospora cayetanensis*.

Past Medical Diagnosis: (For new applicants)

Have you ever been diagnosed as being ill with one of the diseases listed above? _____

If you have, what was the date of the diagnosis? _____

High-risk Conditions:

1. Exposure to or suspicion of causing any confirmed outbreak of typhoid fever, *E. coli* O157:H7 infection, shigellosis, hepatitis A
2. A household member diagnosed with typhoid fever, shigellosis, illness due to *E. coli* O157:H7, hepatitis A, *Entamoeba histolytica*, *Campylobacter* spp., *Vibrio cholera* spp., *Cryptosporidium parvum*, *Giardia lamblia*, Hemolytic Uremic Syndrome, *Salmonella* spp. (non-typhi), *Yersinia enterocolitica*, or *Cyclospora cayetanensis*.
3. A household member attending or working in a setting experiencing a confirmed outbreak of typhoid fever, shigellosis, *E. coli* O157:H7 infection, or hepatitis A

I have read (or had explained to me) and understand the requirements concerning my responsibilities under the **105 CMR 590/1999 Food Code** and this agreement to comply with:

1. Reporting requirements specified above involving symptoms, diagnoses, and high-risk conditions specified;
2. Work restrictions or exclusions that are imposed upon me; and
3. Good hygienic practices.

I understand that failure to comply with the terms of this agreement could lead to action by the food establishment or the food regulatory authority that may jeopardize my employment and may involve legal action against me.

Applicant or Food Employee Name (please print) _____

Signature of Applicant or Food Employee _____ **Date** _____

Signature of Permit Holder/Representative _____ **Date** _____

Exclusions and Restrictions for Food Employees and Applicants

Health Status	Facilities Serving Highly Susceptible Population	Facilities <i>Not</i> Serving Highly Susceptible Population
1. Diagnosed with illness due to <i>Salmonella</i> Typhi, <i>Shigella</i> spp., <i>Escherichia coli</i>)157:H7, or Hepatitis A Virus	Exclude 590.003(D)(1)	Exclude 590.003(D)(1)
2. Experiencing a symptom listed in 2-201.11(B): diarrhea, fever, vomiting, sore throat w/ fever, open sore	Restrict 590.003(D)(2)(a)	Restrict 590.003(D)(2)(a)
3. Experiencing a symptom listed in 2-201.11(B) (1) and meets a high-risk condition of 2-201.11(D)(1)-(3)	Exclude 590.003(D)(3)(a)	Restrict 590.003(D)(2)(a)
4. Asymptomatic but stools positive for <i>S. Typhi</i> , <i>Shigella</i> spp., or <i>E. coli</i> O157:H7 or diagnosed with Hepatitis A	Exclude 590.003(D)(1)	Exclude 590.003(D)(1)
5. Asymptomatic but is diagnosed with an infectious agent specified in 590.003(C)(5)-(14).	Exclude 590.003(D)(3)(b)	Restrict 590.003(D)(2)(b)
6. Past illness from <i>Salmonella</i> Typhi within the last three months	Exclude 590.003(D)(3)(c)	Exclude 590.003(D)(1)
7. Past illness from <i>Shigella</i> spp. or <i>E. coli</i> O157:H7 within the last month	Exclude 590.003(D)(3)(d)	Exclude 590.003(D)(1)
8. Past illness with disease caused by infectious agent specified in 590.003(C)(5)-(14) within the last month.	Exclude 590.003(D)(3)(b)	Restrict 590.003(D)(2)(b)
9. Onset of jaundice within the last 7 days	Exclude 590.003(D)(4)(a)	Exclude 590.003(D)(4)(a)
10. Onset of jaundice more than seven days ago	Exclude 590.003(D)(4)(b)(1)	Restrict 590.003(D)(4)(b)(2)
11. Experiencing persistent sneezing, coughing, runny nose that causes discharges from the eyes, nose or mouth	Restrict 2-401.12	Restrict 2-401.12

Removal of Exclusions and Restrictions for Food Employees and Applicants

1 of 2

Health Status	Facilities Serving Highly Susceptible Population	Facilities Not Serving Highly Susceptible Population
<p>1. Diagnosed with illness due to <i>Salmonella</i> Typhi, <i>Shigella</i> spp., <i>Escherichia coli</i> O157:H7, or Hepatitis A virus</p> <p>Exclude</p>	<p>590.003(E)(1)</p> <p>a. Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND b. RA approval</p>	<p>590.003(E)(1)</p> <p>(a) Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND (b) RA Approval</p>
<p>2. Experiencing a symptom listed in 2-201.11(B)</p> <p>Restrict</p>	<p>590.003(E)(2)</p> <p>a.) No illness results; no symptoms OR b.) If suspect cause of illness: 1.) Free of symptoms, AND 2.) written medical documentation to BOH that person is free of disease as specified in 590.017 AND 3.) RA approval OR c. Written medical documentation that symptoms experienced are from noninfectious condition</p>	<p>590.003(E)(2)</p> <p>a.) No illness results: no symptoms OR b.) If suspect cause of illness: (1) Free of symptoms, AND (2) written medical documentation to BOH that person is free of disease as specified in 590.017 AND (3) RA Approval OR c.) Written medical documentation that symptoms experienced are from noninfectious condition.</p>
<p>3. Experiencing a symptom listed in 2-201.11(B)(1) and meets a high risk condition 2-201.11(D)(1)-(3)</p> <p>HS Pop: Exclude General Population: Restrict</p>	<p>590.003(E)(4)</p> <p>a.) Written medical documentation to BOH that 1.) person is free of infectious agent of concern as specified in 590.017 OR 2.) free of jaundice as specified under 590.003(E)(5) if Hepatitis A is the agent of concern OR b.) person's symptoms are the result of a chronic, non-infectious condition AND b.) RA approval</p>	<p>590.003(E)(2)</p> <p>a.) No illness results: no symptoms OR b.) if suspect cause of illness: 1.) Free of symptoms, AND 2.) written medical documentation to BOH that person is free of disease, specified in 590.017 AND 3.) RA approval OR c. written documentation that symptoms experienced are from to noninfectious condition</p>
<p>4. Asymptomatic but stools positive for <i>S. Typhi</i>, <i>Shigella</i> spp., or <i>E. coli</i> O157:H7</p> <p>Exclude</p>	<p>590.003(E)(1)</p> <p>a.) Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND b.) RA approval</p>	<p>590.003(E)(1)</p> <p>a.) Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND b.) RA approval</p>
<p>5. Asymptomatic but is diagnosed with an infectious agent specified in 590.003(C)(5)-(14)</p> <p>HS Pop: Exclude General Population: Restrict</p>	<p>590.003(E)(4)</p> <p>a.) Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND b.) RA approval</p>	<p>590.003(E)(3)</p> <p>a.) Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND b.) RA approval</p>

RA = Regulatory Authority

Removal of Exclusions and Restrictions for Food Employees and Applicants

2 of 2

Health Status	Facilities Serving Highly Susceptible Population	Facilities Not Serving Highly Susceptible Population
6. Past illness from <i>Salmonella</i> Typhi within the last 3 months HS Population: Exclude General Population: Exclude	590.003(E)(4) a. Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND b. RA approval	590.003(E)(1) (a) Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND (b) RA Approval
7. Past illness from <i>Shigella</i> spp., or <i>E. Coli</i> O157:H7 within last month HS Population: Exclude General Population: Exclude	590.003(E)(4) a. Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND b. RA approval	590.003(E)(1) (a) Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND (b) RA Approval
8. Past illness with disease caused by infectious agent specified in 590.003(C)(5)-(14) within the last month HS Pop: Exclude General Population: Restrict	590.003(E)(4) a.) Written medical documentation to BOH that person is free of the infectious agent, specified in 590.017 AND b.) RA approval	590.003(E)(3) a.) Written medical documentation to BOH that person is free of infectious agent, specified in 590.017 AND b.) RA approval
9. Onset of jaundice within last 7 days Exclude	590.003(E)(5) a.) Person must provide written medical documentation that s/he is free of Hepatitis A, specified in 590.017 AND b.) RA approval Note: Cannot remove exclusion until at least 7 days have passed since the onset of jaundice.	590.003(E)(5) a.) Person must provide written medical documentation that s/he is free of Hepatitis A, specified in 590.017 AND b.) RA approval Note: Cannot remove exclusion until at least 7 days have passed since the onset of jaundice.
10. Onset of jaundice more than 7 days ago HS Pop: Exclude General Population: Restrict	590.003(E)(5) a. Person must provide written medical documentation that s/he is free of Hepatitis A, specified in 590.017 AND b.) RA approval	590.003(E)(5) a. Person must provide written medical documentation that s/he is free of Hepatitis A, specified in 590.017 AND b.) RA approval

RA = Regulatory Authority

Guide to Excluding and Restricting Food Employees for Establishments Serving the General Population

Health Status of Employee	Exclude or Restrict?	Notify Local Board of Health?	Employee Back to Work?
Employee has persistent sneezing, coughing, runny nose which causes discharges from the eyes, nose or mouth	Restrict	No	Employee can return to normal duties once the symptoms have stopped.
Experiencing one or more of the following symptoms: diarrhea, vomiting, fever, sore throat with fever, open sore*	Restrict	No, unless more than one employee is ill with similar symptoms or employee was source of illness in others	If ill employee did not cause an illness in someone else, s/he can work once symptoms have stopped. If s/he is suspected of being part of a foodborne illness outbreak, s/he will also need written medical documentation and regulatory authority approval. If an open sore can be covered with a water-tight covering, the employee can work as normal.
Diagnosed with one of these very contagious diseases: <i>Salmonella</i> Typhi, <i>Shigella spp.</i> , <i>E. Coli</i> O157:H7, or Hepatitis A.	Exclude	Yes	If symptoms are present, the employee must wait until they resolve. The employee will also need written medical documentation and approval from the regulatory authority.
Diagnosed with any other disease which is transmissible through food such as Salmonellosis, Giardiasis and Campylobacteriosis (for complete list see 590.003 (C)(5)-(14)	Restrict	Yes	If symptoms are present, the employee must wait until they resolve. The employee will also need written medical documentation and approval from the regulatory authority.
Employee was ill with <i>Salmonella</i> Typhi within the last three months.	Restrict	Yes	If symptoms are present, the employee must wait until they resolve. The employee will also need written medical documentation and approval from the regulatory authority.
Employee was ill with <i>Shigella spp.</i> <i>E. Coli</i> O157:H7 within the past month.	Exclude	Yes	The employee will need to provide written medical documentation to the regulatory authority.
Employee was ill with any other disease, that is transmissible through food within the past month (see 590.003 (C)(5)-(14) and consult Board of Health).	Exclude	Yes	The employee will need to provide written medical documentation to the regulatory authority.
Employee was ill with any other disease	Restrict	Yes	The employee will need to provide written medical documentation to the regulatory authority.
Employee has become jaundiced within the past 7 days	Exclude	Yes	The employee must be excluded for at least 7 days from the onset of jaundice. After 7 days the employee can work if s/he is free of all symptoms, has written medical documentation and approval from the regulatory authority.
Employee is jaundiced but it started more than 7 days ago.	Restrict	Yes	The employee must be free of all symptoms and must have written medical documentation and approval from the regulatory authority.
Employee lives with someone who was diagnosed with Hepatitis A or <i>Salmonella</i> Typhi	Exclude	Yes	For Hepatitis A, the employee will need to be excluded for 28 days unless s/he receives Immune Globulin within 2 weeks of exposure. For <i>Salmonella</i> Typhi, the employee must provide medical documentation and approval from the regulatory authority

* If an employee has symptoms from a chronic condition that is not contagious, such as Crohn's Disease, irritable bowel syndrome or ulcerative colitis, the person-in-charge should have the employee provide medical documentation which confirms this information. If an employee has diarrhea and lives with someone who was diagnosed with an illness which is transmissible through food, the regulatory authority must be notified and the employee will need to provide medical documentation that he is free of the illness of concern.

How do I know if I serve the *general population*?

Most food service establishments serve the general population. Those that do not serve the general population are food establishments which operate in facilities such as hospitals, nursing homes, daycare centers, and assisted living centers. Such establishments have more stringent requirements for excluding and restricting ill employees because the population served are considered a highly (foodborne illness) susceptible population. A highly susceptible population is defined as a group of people who at increased risk of disease because this population is more likely to be immunocompromised as a result of to old age, very young age, or a medical condition.

For the purposes of the new regulations, a highly-susceptible population is considered to be one which is in a **facility** which provides health care or assisted living services, such as a hospital or nursing home, or in a **facility** which provides custodial care to preschool age children such as a day care center. All other food establishments serve the general population.

What is written medical documentation?

Written medical documentation, if required, means that the ill employee must have written proof that s/he is free of any disease which could be transmitted to others through food. In most cases, this will be satisfied by providing copies of lab tests. However, in certain situations, it will require a written note from a licensed doctor, nurse practitioner or physician's assistant. The written documentation must be provided to the local Board of Health. The local Board of Health can explain what will be needed for each situation in order to have an exclusion or restriction lifted.

Who is the *regulatory authority*?

The regulatory authority is usually the local Board of Health in the city or town in which the establishment is licensed. In some cases, such as a large outbreak, it may be the Mass. Department of Public Health.

What does it mean to *restrict* a food employee?

A restriction means that the food employee may **not** work with exposed food, clean utensils and equipment, clean linens and unwrapped single-service and single-use articles.

What does it mean to *exclude* a food employee?

If a food employee needs to be excluded, the employee may not enter any part of the establishment in which food or equipment is stored, prepared or served.

Who is responsible for reporting symptoms or illnesses?

The responsibility to report symptoms or illnesses lies with the food employee. Every employee should be made aware of this requirement when first hired. Symptoms or illnesses should be reported to the person-in-charge.

What is the role of the person-in-charge?

The person-in-charge has many roles. The person-in-charge must require that employees report any symptoms or illnesses, and the person-in-charge must do everything possible to insure that employees are complying with this requirement. In addition, when indicated (see chart), the person-in-charge must exclude the employee from the establishment or restrict the duties of the employee until the medical condition or symptoms resolve. In many instances, the person-in-charge also is required to notify the local Board of Health that the food establishment has an ill employee.

What can the person-in-charge do to encourage employee compliance with the reporting requirement?

If employees will lose time from work, they may be reluctant to report their illnesses to the management. One way to encourage reporting would be to allow a certain number of paid sick days for each employee. In addition, educating the employees about the importance of not working when sick may help motivate them to be responsible and not work when they might pose a risk to

Guide to Excluding and Restricting Food Employees for Establishments Serving Highly Susceptible Populations

Health Status of Employee	Exclude or Restrict?	Notify Local Board of Health?	Employee Back to Work?
Employee has persistent sneezing, coughing, runny nose which causes discharges from the eyes, nose or mouth	Restrict	No	Employee can return to normal duties once the symptoms have stopped.
Experiencing one or more of the following symptoms: diarrhea, vomiting, fever, sore throat with fever, open sore*	Restrict	No, unless more than one employee was source of illness in others	If ill employee did not cause an illness in someone else, s/he can work once symptoms have stopped. If s/he is suspected of being the source of a foodborne illness, s/he will also need written medical documentation and regulatory authority approval. If an open sore can be covered with a water-tight covering, the employee can work as normal.
Experiencing a symptom as above, but also meets a high-risk condition**	Exclude	Yes	Once symptoms have resolved, the employee will need medical documentation and approval from the regulatory authority
Diagnosed with one of these very contagious diseases: <i>Salmonella</i> Typhi, <i>Shigella spp.</i> , <i>E. Coli</i> O157:H7, or Hepatitis A.	Exclude	Yes	If symptoms are present, the employee must wait until they resolve. The employee will also need written medical documentation and approval from the regulatory authority.
Diagnosed with any other disease which is transmissible through food such as Salmonellosis, Giardiasis and Campylobacteriosis (for complete list see 590.003 (C)(5)-(14))	Exclude	Yes	If symptoms are present, the employee must wait until they resolve. The employee will also need written medical documentation and approval from the regulatory authority.
Employee was ill with <i>Salmonella</i> Typhi within the last three months.	Exclude	Yes	If symptoms are present, the employee must wait until they resolve. The employee will also need written medical documentation and approval from the regulatory authority.
Employee was ill with <i>Shigella spp.</i> , <i>E. Coli</i> O157:H7 or any other disease that is transmissible through food within the past month (see 590.003 (C)(5)-(14) and consult Board of Health).	Exclude	Yes	The employee will need to provide written medical documentation to the regulatory authority.
Employee has become jaundiced within the past 7 days	Exclude	Yes	The employee must be excluded for at least 7 days from the onset of jaundice. After 7 days the employee can work if s/he is free of all symptoms, has written medical documentation and approval from the regulatory authority.
Employee is jaundiced but it started more than 7 days ago.	Exclude	Yes	The employee must be free of all symptoms and must have written medical documentation and approval from the regulatory authority.

* If the employee has symptoms which are the result of a chronic medical condition which is not contagious, such as Crohn's disease, irritable bowel syndrome or ulcerative colitis, the person-in-charge should have the employee provide medical documentation which confirms this information.**

** "High risk conditions" is defined in Food Code 2-201.11(D). Essentially, it means conditions which put an employee at high risk of becoming ill because they either prepared or consumed food which caused an outbreak of *Salmonella* Typhi, *Shigella spp.*, *E. coli* O157:H7 or Hepatitis A, or they live with a person who is ill with a disease which is transmissible through food, or they live with someone who has been exposed to one of these diseases. If an employee has a high risk condition, but has no symptoms, they can continue to work. However, they should report the high risk condition to the person on charge. If the employee becomes symptomatic, they will need to be excluded from work. If the employee lives with someone who has Hepatitis A or *Salmonella* Typhi they must be excluded.

What the Person-in-Charge needs to know about excluding or restricting sick employees.

How do I know if I serve a *highly-susceptible population*?

A highly-susceptible population is defined as a group of people who are increased risk of disease because this population is more likely to be immunocompromised as a result of old age, very young age, or a medical condition.

For the purposes of the new regulations, a highly-susceptible population is considered to be one which is in a **facility** which provides health care or assisted living services, i.e., a hospital or nursing home, or in a **facility** which provides custodial care to preschool age children, i.e., a day care center. Because of the likelihood of immune deficiency within this population, food establishments which operate in these facilities have more stringent requirements for excluding and restricting ill employees.

What is *written medical documentation*?

Written medical documentation, if required, means that the ill employee must have written proof that s/he is free of any disease which could be transmitted to others through food. In most cases, this will be satisfied by providing copies of lab tests. However, in certain situations, it will require a written note from a licensed doctor, nurse practitioner or physician's assistant. The written documentation must be provided to the local Board of Health. The local Board of Health can explain what will be needed in each situation in order to have any exclusions or restrictions lifted.

Who is the *regulatory authority*?

The regulatory authority is usually the local Board of Health in the city or town in which the establishment is licensed. In some cases, such as a large outbreak, it may be the Massachusetts Department of Public Health.

What does it mean to *restrict* a food employee?

A restriction means that the food employee may **not** work with exposed food, clean utensils and equipment, clean linens and unwrapped single-service and single-use articles.

What does it mean to *exclude* a food employee?

If a food employee needs to be excluded, they may not enter any part of the establishment in which food or equipment is stored, prepared or served.

Who is responsible for reporting symptoms or illnesses?

The responsibility to report symptoms or illnesses rests with the food employee. Every employee should be made aware of this requirement when first hired. Symptoms or illnesses should be reported to the person-in-charge.

What is the role of the person-in-charge?

The person in charge has many roles. The person-in-charge must require that employees report any symptoms or illnesses, and the person-in-charge must do everything he can to insure that employees are complying with this requirement. In addition, when indicated (see chart), the person-in-charge must exclude the employee from the establishment or restrict the duties of the employee until the medical condition or symptoms resolve. In many instances, the person-in-charge is required to notify the local Board of Health that the food establishment has an ill employee.

What can the person-in-charge do to encourage employee compliance with the reporting requirement?

If employees will lose time from work, they may be reluctant to report their illnesses to the management. One way to encourage reporting would be to allow a certain number of paid sick days for each employee. In addition, educating the employees about the importance of not working when sick may help motivate them to be responsible and not work when they might pose a risk to customers or other employees. If possible, assign the person to duties which do not put the employee at risk of contaminating food or infecting other employees.

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Sulfites

Erica Berl, D.V.M.

Sulfites or sulfiting agents are a group of sulfur-containing compounds that have been used in food around the world for centuries. Six are used by the food industry: sulfur dioxide, sodium sulfite, sodium bisulfite, potassium bisulfite, sodium metabisulfite and potassium metabisulfite. They are used as antioxidants to prevent or reduce discoloration of light-colored fruits such as dried apples and potatoes, and to prevent the growth of microorganisms in fermented foods such as wine. They can be used to prevent melanosis, "black spot," on shrimp and lobster. Sulfites may also be used for bleaching food starches and as preventives against rust and scale in boiler water used in making steam which will come in contact with food. Sulfites can also be used in the production of cellophane for food packaging. They are also frequently used in canned vegetables and various snack foods. Sulfites are generally recognized as safe (GRAS) by the FDA but have had restrictions placed on their use.

The 1999 Federal Food Code prohibits the use of sulfiting agents on fresh fruits and vegetables intended for raw consumption and on foods considered to be a good source of vitamin B₁ (thiamine). This provision prohibits the application of sulfiting agents at the food service establishment and also the receipt of products that have been treated with sulfiting agents. Grapes are the only whole fruits that are exempt from this requirement. Because sulfites destroy vitamin B₁, FDA prohibits the use of sulfites in foods that are important sources of this nutrient, such as enriched flour, meats, fish, peanuts, beans, peas and wheat germ.

Grapes are the only fresh fruit that may be

treated with sulfiting agents. Sulfites are necessary to control post-harvest infection by the fungus *Botrytis cinerea* that is a very common pest. The crops can become infected just prior to harvest in the field, during the post-harvest handling phase, or the infection can occur early in development and then lie dormant in the berry until the sugar content increases. The fungus keeps growing during storage of the grape and can even grow and spread at refrigeration temperatures. Sulfur dioxide is the most effective way to control this pest and is used widely on table grapes. The Environmental Protection Agency has an allowable tolerance of 10.0 ppm (that's 1 part sulfite to 100,000 parts of food--the equivalent of a drop of water in a bathtub) sulfite residues on grapes. (This, by the way, is the lowest level, which can be detected by current analytical techniques.)

There are two major concerns about the use of sulfiting agents. The first concern is that sulfur-based preservatives have been shown to be allergenic for some people, and their presence in or on foods can pose a health risk to sensitive people. The second issue is one of misrepresentation of foods. Sulfites had commonly been used to maintain the color and crispness of fresh produce beyond their usual shelf-life. Although this practice is now rare, the FDA specifically banned it in 1986, the requirement remains on the books today. The USDA has also banned the use of sulfiting agents in meat and poultry because they could be used to improve the color of old meat that has turned brown.

The more important concern about sulfites is that some people, especially asthmatics, are sensitive to sulfites. The FDA estimates that 5 percent of asthmatics are sensitive to sulfites, and approximately 1 percent of the general population may be as well. Since the majority of people can eat

sulfites safely, they have not been banned. Instead, the FDA requires disclosure of these ingredients on the labels of packaged foods. It is the responsibility of the sensitive consumer to read labels and avoid the ingredient.

Foods that contain sulfites as preservatives must always list the agent in the ingredient statement. Sulfites used in food processing, but not serving as preservatives in the final food, must be listed on the label if they are present at a level of 10 ppm or higher. Food that is sold in bulk form must have a sign or placard next to or on the bin that lists the ingredients so that a sensitive consumer can avoid the product if it contains sulfiting agents. Currently, restaurants are not required to disclose whether sulfites are present in foods that are served. Again, it is the responsibility of the consumer to ask about the ingredients in the foods, and to avoid foods commonly treated with sulfites. Since some people may be sensitive to low levels of sulfites, even to levels less than 10 ppm, it is wise for these people to avoid foods that are commonly prepared using sulfiting agents.

Foods that may contain sulfites (*partial list*)

Alcoholic Beverages: (labeling of sulfites in alcoholic beverages is required if the concentration is 10 parts per million or greater).

Bakery Items: Breads containing dough conditioners, cookies, crackers, pie and pizza crusts, tortillas, waffles.

Beverages: Beverages containing sugar or corn syrup, dried citrus fruit beverages, canned, bottled, and frozen fruit juices.

Condiments: Horseradish, relishes, pickles, olives, wine vinegar.

Dairy: Processed cheese foods.

Dried Foods: Dried herbs and spices, dried fruits, trail mixes.

Fish and Shellfish: Fresh shrimp and scallops; frozen, canned or dried clams; shrimp, lobster, crab, scallops, dried cod.

Fruits: Fresh grapes, dried fruits (including raisins and prunes, and especially pale fruits that have not discolored); canned, bottled and frozen fruit and juices; maraschino cherries; glazed fruit.

Gelatins, Fillings, Frostings: Fruit fillings, flavored and unflavored gelatin, pectin, jelling agents, canned frostings and frosting mixes.

Grain Products: Cornstarch, modified food starch, spinach pasta, gravies, hominy, breading, batters, noodle and rice mixes.

Hard Candies

Jams and Jellies

Nuts: Shredded coconut.

Plant Protein Products: Soy protein products including tofu, textured vegetable protein, infant formula.

Snack Foods: Filled crackers, dried fruit snacks, trail mixes, tortilla chips, potato chips.

Sugars: Brown, white, powdered and raw sugars.

Vegetables: Vegetable juices, canned vegetables (including potatoes), pickled vegetables (including cauliflower, peppers, sauerkraut), "fresh cut" potatoes (as delivered to restaurants), frozen vegetables (including French fries and deli potato salad).

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Sushi

Erica Berl, D.V.M. and Linda M. Sperandio

Although many people believe that Sushi is synonymous with raw fish, they are confusing it with Sashimi, which is a Japanese term for raw fillets of fish. Sushi is not raw fish, but may contain raw fish. “Sushi” means “vinegared rice” and is a term used for different types of Japanese bite-sized rice rolls with ingredients such as raw or cooked fish, cooked egg, seaweed and fresh and pickled vegetables. However, Sushi has become popular because of its association with raw fish. Raw fish is not only used as an edible ingredient for Sushi, but also as a garnish or decoration.

One of the most popular items today that you will find in a supermarket is California Maki Roll. This consists of crabstick (surimi), cucumber and avocado, placed on a blanket of seaweed (nori) and rice that is used to wrap it like a jellyroll. The garnish often consists of sesame seeds and, sometimes, orange fish eggs or caviar. Many vegetarians prefer the Avocado or Cucumber Roll. This contains avocado or cucumber in the middle, and a blanket of rice and nori (green seaweed) to wrap it. Fried fish items, such as fried soft-shell crab, fried shrimp, etc., can also be included as a main ingredient in the center of a Sushi roll. Therefore, one can order Sushi and not eat any raw fish. That is not to say that using raw fish has not become trendy in this country. The most popular of the raw-fish-type Sushi is tuna (Maguro). Salmon and eel are also very popular. Many Sushi Platters consist of a colorful array of raw fish sushi rolls and a few flattened, oval shapes of rice with raw fish placed over the top (Nigiri Zushi), and it is not unusual to find raw quail eggs as a garnish for some sushi items.

All Sushi begins with the vinegared rice, which is made by mixing a combination of rice vinegar, sugar and salt into cooked, hot, short grain Japanese rice. Of course, preparation may vary among chefs, as some sushi chefs may use other “secret” ingredients like

lemon juice. The rice is quickly cooled to room temperature for handling. Chilling rice in a refrigerator is not preferred because it loses its texture and clumps together, making it difficult to mold into a “log.” It is recommended to cool the vinegared rice by spreading a thin layer in a flat pan while fanning.

A Sushi Chef uses a bamboo mat and lays a sheet of seaweed on top. Then the chef takes a small palm full of vinegared rice, sometimes dips it into a vinegar and water bowl for moistening, and spreads it onto the sheet of seaweed. All this has traditionally been done with bare hands. The Japanese horseradish paste (wasabi), vegetables, egg and raw and cooked fish (fillers) are usually placed in front of the Sushi chef in a small, elongated, refrigerated display case at the front of the Sushi bar. This area is kept open much of the time during busy periods and must keep the product within proper temperatures. The fillers are added to the center of the rice; the seaweed and rice blanket are then rolled within the bamboo mat to make a uniform “log”. The log is then cut into individual portions. As the “log” is cut into pieces for service, the prepared Sushi is usually served with a soy sauce dip, pickled ginger (gari) and wasabi on the side.

Sushi: Safety Concerns

There are several food safety concerns which arise from and are unique to the preparation and service of sushi in the retail setting. First, the rice is easiest to handle at temperatures between 70°F and 80°F, which is a temperature range promoting pathogen growth. Second, many people prefer to eat sushi at room temperature, which makes refrigeration storage less desirable. Raw fish is a common ingredient. Many species of fish are known to harbor harmful parasites and all may be contaminated with harmful bacteria and viruses. Sushi made with raw fish is often prepared along with sushi prepared with cooked and vegetable ingredients. This arrangement in-

creases the risk for cross-contamination of cooked products from raw ingredients. Last, sushi is in demand. Once found only in Japanese restaurants, sushi is now commonly prepared and sold in supermarkets.

Sushi can be prepared safely, but it does take special care. The rice is typically acidified with rice vinegar. If the pH of the rice is below 4.6, the rice can not support the growth of pathogens and can be considered a non-potentially hazardous food (PHF). Rice, which has been properly acidified, can be stored at room temperature. The difficulty with this operation is that if an establishment wants to rely on acidification to keep the rice safe, the pH of **every** batch must be checked to insure that the rice has in fact been rendered non-PHF. If an establishment chooses not to monitor the pH of the rice, then it must use accepted time and temperature controls to control pathogen growth.

Many species of finfish naturally contain parasites. These parasites do not harm the fish or hurt the quality of the meat, but the parasites can cause illness in humans. Because freezing will kill parasites, most finfish will need to be frozen prior to being served raw. The U.S. Food and Drug Administration (FDA) requires that fish be frozen at -4°F for seven days or at -35°F for 15 hours in order to insure parasite destruction.

The only fish which does not requiring freezing are those in which parasites are not a natural hazard. Any fish which is being cooked does not need to be previously frozen. It should be remembered that freezing does not guarantee the destruction of bacterial or viral pathogens.

After January 1, 2001, consumers will be required to be advised through a food establishment's chosen method (menu, signage, table tent, etc.) that there is an increased risk of foodborne illness from consuming raw fish.

Care must be taken to avoid cross-contamination between raw and cooked ingre-

dients that are being prepared. First, each ingredient should be kept in separate containers at proper temperatures. There should be separate set-ups for raw and cooked products if possible. A set-up consists of a bamboo mat, knife and cutting board. If separate set-ups are not possible, then the utensils should be cleaned and sanitized between preparation of sushi containing raw and cooked ingredients. The bamboo mat is difficult to clean and sanitize. Therefore, the mat should be wrapped in plastic and rewrapped in new plastic wrap at least every four hours or after use on raw fish.

Preparing sushi requires good hand dexterity and has traditionally involved considerable bare-hand contact. Bare-hand contact must be avoided. Nitrile gloves (non-latex) can be used without sacrificing the "feel" and dexterity needed. If a sushi chef wishes to use bare hands, a written plan must be developed that includes enhanced hand washing, and details how cross-contamination will be avoided and good hygiene will be practiced to insure that the sushi remains safe for consumers to eat.

Sushi has become increasingly popular in Massachusetts. Prepared correctly, the risk from raw fish ingredients can be minimized, and the safety of other types of sushi can be assured.

Some Useful Addresses on the Food Protection Program Website	
Home Page: Food Protection Program	http://www.state.ma.us/dph/fpp/
License and Permit Applications	http://www.state.ma.us/dph/fpp/fpplic.htm
Survey of Bottled Water Sold in Massachusetts	http://www.state.ma.us/dph/fpp/botwat00.htm
105 CMR 590.000/Food Code Fact Sheet	http://www.state.ma.us/dph/fpp/Fcobta.htm
Copy of the revised 590.000	http://www.state.ma.us/dph/fpp/fc00.pdf
Interstate Certified Shellfish Shippers List Update	http://www.state.ma.us/dph/fpp/issl.htm
Sanitary Operating Procedures for Massachusetts Cider Mills	http://www.state.ma.us/dph/fpp/oldcidop.htm
Ten Turkey Tips for Safe Holiday	http://www.state.ma.us/dph/fpp/turkey.htm
Massachusetts Foodborne Illness Investigation and Control Reference Manual	http://www.state.ma.us/dph/fpp/refman.htm
Home Page: Commonwealth of Massachusetts	http://www.state.ma.us/
Home Page: Massachusetts Department of Public Health	http://www.state.ma.us/dph
Other Useful Website Addresses	
FDA: U.S. Food and Drug Administration	http://www.fda.gov/
FDA: Center for Food Safety and Applied Nutrition	http://vm.cfsan.fda.gov/
USDA: U.S. Department of Agriculture: Food Safety and Inspection Services	http://www.fsis.usda.gov/
CDC: Centers for Disease Control and Prevention	http://www.cdc.gov/
Government Food Safety Information	http://www.foodsafety.gov/

**Foodborne Illness:
What Consumers Need To Know**
<http://www.foodsafety.gov/~dms/fsefborn.html>
FDA Center for Food Safety and Applied Nutrition
USDA Food Safety and Inspection Service
September 2000*

What is Foodborne Illness?

Foodborne illness often presents itself as flu-like symptoms such as nausea, vomiting, diarrhea, or fever, so many people may not recognize the illness is caused by bacteria or other pathogens in food.

Thousands of types of bacteria are naturally present in our environment. Not all bacteria cause disease in humans. For example, some bacteria are used beneficially in making cheese and yogurt.

Bacteria that cause disease are called pathogens. When certain pathogens enter the food supply, they can cause foodborne illness. Millions of cases of foodborne illness occur each year. Most cases of foodborne illness can be prevented. Proper cooking or processing of food destroys bacteria.

Age and physical condition place some persons at higher risk than others, no matter what type of bacteria is implicated. Very young children, pregnant women, the elderly and people with compromised immune systems are at greatest risk from any pathogen. Some persons may become ill after ingesting only a few harmful bacteria; others may remain symptom free after ingesting thousands.

How Bacteria Get in Food

Bacteria may be present on products when you purchase them. Plastic-wrapped boneless chicken breasts and ground meat, for example, were once part of live chickens or cattle. Raw meat, poultry, seafood, and eggs are not sterile. Neither is fresh produce such as lettuce, tomatoes, sprouts, and melons.

Foods, including safely cooked, ready-to-eat foods, can become cross-contaminated with bacteria transferred from raw products, meat

juices or other contaminated products, or from food handlers with poor personal hygiene.

The "Danger Zone"

Bacteria multiply rapidly between 40°F and 140°F. To keep food out of this "danger zone," **keep cold food cold and hot food hot.**

? **Store** food in the refrigerator (40°F or below) or freezer (0°F or below).

? **Cook** food to 160°F (145°F for roasts, steaks, and chops of beef, veal, and lamb).

? **Maintain** hot cooked food at 140°F or above.

? **When** reheating cooked food, reheat to 165°F.

In Case of Suspected Foodborne Illness

Follow these general guidelines:

1. **Preserve the evidence.** If a portion of the suspect food is available, wrap it securely, mark "DANGER" and freeze it. Save all the packaging materials, such as cans or cartons. Write down the food type, the date, other identifying marks on the package, the time consumed, and when the onset of symptoms occurred. Save any identical unopened products.

2. **Seek treatment as necessary.** If the victim is in an "at risk" group, seek medical care immediately. Likewise, if symptoms persist or are severe (such as bloody diarrhea, excessive nausea and vomiting, or high temperature), call your doctor.

3. **Call the local health department** if the suspect food was served at a large gathering, from a restaurant or other food service facility, or if it is a commercial product.

4. **Call the USDA Meat and Poultry Hotline** if the suspect food is a USDA-inspected product and you have all the packaging.

Bacteria That Cause Foodborne Illness

Campylobacter jejuni

FOUND: Intestinal tracts of animals and birds, raw milk, untreated water, and sewage sludge.

TRANSMISSION: Contaminated water, raw milk, and raw or undercooked meat, poultry, or shellfish.

SYMPTOMS: Fever, headache and muscle pain followed by diarrhea (sometimes bloody), abdominal pain, and nausea that appear 2 to 5 days after eating; may last 7 to 10 days.

Clostridium botulinum

FOUND: Widely distributed in nature; soil, water, on plants, and intestinal tracts of animals and fish. Grows only in little or no oxygen.

TRANSMISSION: Bacteria produce a toxin that causes illness. Improperly canned foods, garlic in oil, vacuum-packed and tightly wrapped food.

SYMPTOMS: Toxin affects the nervous system. Symptoms usually appear 18 to 36 hours, but can sometimes appear as few as 4 hours or as many as 8 days after eating; double vision, droopy eyelids, trouble speaking and swallowing, and difficulty breathing. Fatal in 3 to 10 days if not treated.

Clostridium perfringens

FOUND: Soil, dust, sewage, and intestinal tracts of animals and humans. Grows only in little or no oxygen.

TRANSMISSION: Called "the cafeteria germ" because many outbreaks result from food left for long periods in steam tables or at room temperature. Bacteria destroyed by cooking, but some toxin-producing spores may survive.

SYMPTOMS: Diarrhea and gas pains may appear 8 to 24 hours after eating; usually last about 1 day, but less severe symptoms may persist for 1 to 2 weeks.

Escherichia coli O157:H7

FOUND: Intestinal tracts of some mammals, raw milk, unchlorinated water; one of several strains of *E. coli* than can cause human illness.

TRANSMISSION: Contaminated water, raw milk, raw or rare ground beef, unpasteurized apple juice or cider, uncooked fruits and vegetables; person-to-person.

SYMPTOMS: Diarrhea or bloody diarrhea, abdominal cramps, nausea, and malaise; can begin 2 to 5 days after food is eaten, lasting about 8 days. Some, especially the very young, have developed hemolytic-uremic syndrome (HUS) that causes acute kidney failure. A similar illness, thrombotic thrombocytopenic purpura (TTP), may occur in adults.

Listeria monocytogenes

FOUND: Intestinal tracts of humans and animals, milk, soil, leaf vegetables; can grow slowly at refrigerator temperatures.

TRANSMISSION: Ready-to-eat foods such as hot dogs, luncheon meats, cold cuts, fermented or dry sausage, and other deli-style meat and poultry, soft cheeses and unpasteurized milk.

SYMPTOMS: Fever, chills, headache, backache, sometimes upset stomach, abdominal pain and diarrhea; may take up to 3 weeks to become ill; may later develop more serious illness in at-risk patients (pregnant women and newborns, older adults, and people with weakened immune systems).

Salmonella (over 2300 types)

FOUND: Intestinal tracts and feces of animals; *Salmonella* Enteritidis in eggs.

TRANSMISSION: Raw or undercooked eggs, poultry, and meat; raw milk and dairy products; seafood, and food handlers.

SYMPTOMS: Stomach pain, diarrhea, nausea, chills, fever, and headache usually appear 8 to 72 hours after eating; may last 1 to 2 days.

Shigella (over 30 types)

FOUND: Human intestinal tract; rarely found in other animals.

TRANSMISSION: Person-to-person by fecal-oral route; fecal contamination of food and water. Most outbreaks result from food, especially salads, prepared and handled by workers using poor personal hygiene.

SYMPTOMS: Disease referred to as "shigellosis" or bacillary dysentery. Diarrhea containing blood and mucus, fever, abdominal cramps, chills, and vomiting; 12 to 50 hours from ingestion of bacteria; can last a few days to 2 weeks.

Staphylococcus aureus

FOUND: On humans (skin, infected cuts, pimples, noses, and throats).

TRANSMISSION: Person-to-person through food from improper food handling. Multiply rapidly at room temperature to produce a toxin that causes illness.

SYMPTOMS: Severe nausea, abdominal cramps, vomiting, and diarrhea occur 1 to 6 hours after eating; recovery within 2 to 3 days -- longer if severe dehydration occurs.

For More Information

USDA Meat and Poultry Hotline:	1-800-535-4555
Washington, D.C.:	202-720-3333
TTY:	1-800-256-7072

Web site: <http://www.fsis.usda.gov/>

FDA Food Information Line: 1 (888) SAFE FOOD

FDA Web site: <http://www.cfsan.fda.gov/>

More information on foodborne pathogens: <http://www.cfsan.fda.gov/~mow/intro.html>

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The Color of Meat and Poultry
Food Safety and Inspection Service
United States Department of Agriculture
Washington, D.C. 20250-3700
<http://www.fsis.usda.gov/oa/pubs/mpcolor.htm>

July 1998
Contact Information Slightly Revised May 2000

I've just opened a package of fresh chicken and the skin looks blue. Is it safe to use?

My package of ground beef is dark in the center. Is this old meat?

The turkey was cooked according to the directions, but the breast meat is pink. Will it make us sick?

These are just a few of the many questions received at the U.S. Department of Agriculture's Meat and Poultry Hotline concerning the color of meat and poultry. Color is important when meat and poultry are purchased, stored, and cooked. Often an attractive, bright color is a consideration for the purchase. So, why are there differences in the color and what do they mean? Listed below are some questions and answers to help you understand the color differences.

1. What factors affect the color of meat and poultry?

Myoglobin, a protein, is responsible for the majority of the red color. Myoglobin doesn't circulate in the blood but is fixed in the tissue cells and is purplish in color. When it is mixed with oxygen, it becomes oxymyoglobin and produces a bright red color. The remaining color comes from the hemoglobin which occurs mainly in the circulating blood, but a small amount can be found in the tissues after slaughter.

Color is also influenced by the age of the animal, the species, sex, diet, and even the exercise it gets. The meat from older animals will be darker in color because the myoglobin level increases with age. Exercised muscles are always darker in color, which means the same animal can have variations of color in its muscles.

In addition, the color of meat and poultry can change as it is being stored at retail and in the home (see explanation in question 5). When safely stored in the refrigerator or freezer, color changes are normal for fresh meat and poultry.

2. Does a change in color indicate spoilage?

Change in color alone does not mean the product is spoiled. Color changes are normal for fresh product. With spoilage there can be a change in color -- often a fading or darkening. In addition to the color change, the meat or poultry will have an off odor, be sticky or tacky to the touch, or it may be slimy. If meat has developed these characteristics, it should not be used.

3. If the color of meat and poultry changes while frozen, is it safe?

Color changes, while meat and poultry are frozen, occur just as they do in the refrigerator. Fading and darkening, for example, do not affect their safety. These changes are minimized by using freezer-type wrapping and by expelling as much air as possible from the package.

4. What are the white dried patches on frozen meat and poultry?

The white dried patches indicate freezer burn. When meat and poultry have been frozen for an extended period of time or have not been wrapped and sealed properly, this will occur. The product remains safe to eat, but the areas with freezer burn will be dried out and tasteless and can be trimmed away if desired.

THE COLOR OF MEAT

5. *When displayed at the grocery store, why is some meat bright red and other meat very dark in color?*

Optimum surface color of fresh meat (i.e., cherry-red for beef; dark cherry-red for lamb; grayish-pink for pork; and pale pink for veal) is highly unstable and short-lived. When meat is fresh and protected from contact with air (such as in vacuum packages), it has the purple-red color that comes from myoglobin, one of the two key pigments responsible for the color of meat.

When exposed to air, myoglobin forms the pigment, oxymyoglobin, which gives meat a pleasingly cherry-red color. The use of a plastic wrap that allows oxygen to pass through it helps ensure that the cut meats will retain this bright red color. However, exposure to store lighting as well as the continued contact of myoglobin and oxymyoglobin with oxygen leads to the formation of metmyoglobin, a pigment that turns meat brownish-red. This color change alone does not mean the product is spoiled (see explanation in question 2).

6. *Why is pre-packaged ground beef red on the outside and sometimes grayish-brown on the inside?*

These color differences do not indicate that the meat is spoiled or old. As discussed earlier, fresh cut meat is purplish in color. Oxygen from the air reacts with meat pigments to form a bright red color which is usually seen on the surface of ground beef purchased in the supermarket. The interior of the meat may be grayish-brown due to the lack of oxygen penetrating below the surface.

7. *A beef roast has darkened in the refrigerator, is it safe?*

Yes, it is safe. The darkening is due to oxidation, the chemical changes in myoglobin due to the oxygen content. This is a normal change during refrigerator storage.

8. *Can cooked ground beef still be pink inside?*

Yes, ground beef can be pink inside after it is safely cooked. The pink color can be due to a reaction between the oven heat and myoglobin, which causes a red or pink color. It can also occur when vegetables containing nitrites are cooked along with the meat. Because doneness and safety cannot be judged by color, it is very important to use a meat thermometer when cooking ground beef. To be sure all harmful bacteria are destroyed, cook all ground beef products to an internal temperature of 160°F throughout.

9. *What causes iridescent colors on meats?*

Meat contains iron, fat, and other compounds. When light hits a slice of meat, it splits into colors like a rainbow. There are various pigments in meat compounds that can give it an iridescent or greenish cast when exposed to heat and processing. Wrapping the meat in airtight packages and storing it away from light will help prevent this situation. Iridescence does not represent decreased quality or safety of the meat.

10. *What causes grayish or green color on cured meats?*

Exposure to light and oxygen causes oxidation to take place, which causes the breaking down of color pigments formed during the curing process. Chemicals in the cure and oxygen, as well as energy from ultraviolet and visible light, contribute to both the chemical breakdown and microbial spoilage of the product. Cure, such as nitrite, chemically changes the color of muscle. Curing solutions are colored in order to distinguish them from other ingredients (such as sugar or salt) used in fresh and cured meat products. For example, cured raw pork is gray, but cured cooked pork (e.g., ham) is light pink.

THE COLOR OF POULTRY

11. *What is the usual color of raw poultry?*

Raw poultry can vary from a bluish-white to yellow. All of these colors are normal and are a direct result of breed, exercise, age, and/or diet. Younger poultry has less fat under the skin, which can cause the bluish cast, and the yellow skin could be a result of marigolds in the feed.

12. What causes the differences in color of raw ground poultry?

Ground poultry varies in color according to the part being ground. Darker pink means more dark meat was used and a lighter pink means more white meat was included (or skin was included). Ground poultry can contain only muscle meat and skin with attached fat in proportion to the whole bird.

13. What causes dark bones in cooked poultry?

Darkening of bones and meat around the bones occurs primarily in young (6-8 weeks) broiler-fryer chickens. Since the bones have not calcified or hardened completely, pigment from the bone marrow seeps through the bones and into the surrounding area. Freezing can also contribute to this darkening. This is an aesthetic issue and not a safety one. The meat is safe to eat when all parts have reached at least 160°F.

14. What color is safely cooked poultry?

Safely cooked poultry can vary in color from white to pink to tan. When the temperature of the poultry as measured in the thigh has reached 180°F, there is usually no other site in the bird lower than the safe temperature of 160°F. Check the temperature in several locations, being sure to include the wing joint. All the meat - including any that remains pink - is safe to eat as soon as all parts reach at least 160°F.

15. Why is some cooked poultry pink?

Chemical changes occur during cooking. Oven gases in a heated gas or electric oven react chemically with hemoglobin in the meat tissues to give it a pink tinge. Often meat of younger birds shows the most pink because their thinner skins permit oven gases to reach the flesh. Older animals have a fat layer under their skin, giving the flesh added protection from the gases. Older poultry may be pink in spots where fat is absent from the skin. Also, nitrates and nitrites, which are often used as preservatives or may occur naturally in the feed or water supply used, can cause a pink color.

16. If fully cooked smoked poultry is pink, is it safe?

Poultry grilled or smoked outdoors can be pink, even when all parts have attained temperatures well above 160°F. There may be a pink-colored rim about one-half inch wide around the outside of the cooked product. Commercially prepared, smoked poultry is usually pink because it is prepared with natural smoke and liquid smoke flavor. Federal regulations require all processed poultry to be cooked to at least 160° F instantly, or to an equivalent level of safety attained by this minimum temperature requirement.

For additional food safety information about meat, poultry, or eggs, call the toll-free USDA Meat and Poultry Hotline at 1-800-535-4555; Washington, DC 202-720-3333; TTY: 1-800-256-7072. It is staffed by home economists, dietitians, and food technologists weekdays from 10 a.m. to 4 p.m. Eastern time, year round. An extensive selection of food safety recordings can be heard 24 hours a day using a touch-tone phone.

The media may call Bessie Berry, Manager, USDA Meat and Poultry Hotline, at 202-720-5604.

Information is also available from the FSIS Web site: <http://www.fsis.usda.gov>

Safer Beaches

Howard S. Wensley, M.S., C.H.O.

Much is happening on the beach front. On August 11, 2000, Massachusetts Governor Argeo Paul Cellucci signed into law House Bill 5395, An Act Relative to Minimum Standards for Public Bathing Beaches. On October 10, 2000 President Clinton signed the Beaches Environmental Awareness and Coastal Health Act of 2000.

The new state law will increase surveillance of both public and semi-public bathing beaches within the Commonwealth. The provisions of this statute requires the Department of Public Health to promulgate minimum standards for bathing beach water quality to include:

- Bacterial and chemical standards
- Physical quality
- Sampling locations, procedures and standards
- The frequency of testing, not to be less than weekly

The statute permits the local board of health, with the approval of the Department of Public Health, to grant a variance from the need to conduct weekly testing. Prior to the grant of a variance, however, there will be the need for at least two seasons of such testing and an updated sanitary survey.

As you may recall, the Department drafted and held public hearings on some amendments to the beach regulations in early summer. Those proposed regulations will be abandoned. The Department will circulate a new set of proposed regulations and hold public hearings in mid fall. This action is being undertaken in order to accommodate standards and definitions dictated by the new statute as well as some of the comments received during the previous public hearings. We hope to have the assistance of the Massachusetts Health Officers Association, the Massachusetts Association of Health Boards, the Massachusetts Environmental Health Association and EPA in developing the proposed regulations.

In addition to ensuring safer beaches, the statute provides that upon appropriation, the Department shall “award competitive grants to local boards of health in the form of a 50 percent reimbursement for the testing, monitoring and analysis of bathing beach waters and to otherwise carry out the provisions of this section and the regulations promulgated thereunder.”

The Department has conducted a survey to attempt to assess the amount of money that will be necessary to provide the grant funding as described in the law. It is anticipated that funding may be included in a supplemental budget to be filed in January 2001.

Therefore, it is essential that boards of health begin to think about any required expansion of its present bathing beach program along with possible increased costs. In order to try to keep the costs for analysis down, the Department will be issuing an RFR for laboratory services that local municipalities may use. It is also suggested that boards of health may wish to develop sampling and monitoring programs on a regional basis in order to maintain economy of scale.

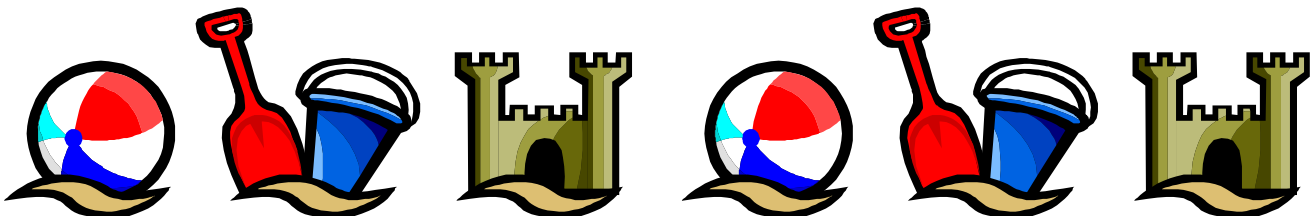
It is also important to note that semi-public beaches will also be required to be tested and monitored. The cost of this testing is the responsibility of the beach operator. A semi-public beach is defined in

the statute as “a bathing beach used in connection with a hotel, motel, trailer park, campground, apartment house, condominium, country club, youth club, school camp or other similar establishment where the primary purpose of the establishment is not the operation of the bathing beach, and where admission to the use of the bathing beach is included in the fee paid for the use of the premises. A semi-public bathing beach also include a bathing beach operated and maintained solely for the use of members and guests of any organization that maintains such a bathing beach.”

It would be prudent for local boards of health to contact all of the semi-public beach operators in their jurisdiction who have no record of conducting testing in the past to make them aware of the new responsibilities.

The new federal law, which will take four years to implement, requires that the states adopt the water quality standards promulgated by the U.S. Environmental Protection Agency. There is a possibility of additional funding from the federal government.

Watch your mail and check our Web page for breaking information:
<http://www.state.ma.us/dph/dcs/dcs.htm>.



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